Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Anisotropy and Feedthrough in Magneto-Rayleigh-Taylor Instabilities[1] MATTHEW WEIS, IAN RITTERSDORF, YUE YING LAU, PENG ZHANG, RONALD GILGENBACH, University of Michigan, Ann Arbor, JACOB ZIER, Naval Research Laboratory — The magneto-Rayleigh-Taylor instability (MRT) in a finite slab is studied analytically using the ideal MHD model. The slab may be accelerated by an arbitrary combination of magnetic pressure and fluid pressure, thus allowing an arbitrary degree of anisotropy intrinsic to the acceleration mechanism [1]. The magnetic field in different regions may assume arbitrary magnitude and direction tangential to the interface. In general, MRT retains robust growth if it exists. However, feedthrough may be substantially reduced if there are magnetic fields on both sides of the slab, and if the MRT mode invokes bending of the magnetic field lines. The analytically tractable eigenmode solutions allow an evaluation of the temporal evolution of MRT from random initial surface roughness.

[1] Y. Y. Lau *et al.*, *Phys. Rev. E83*, 066405 (2011).

[1]Work supported by DoE award DE-SC0002590, NSF award PHY 0903340, and by DoE through Sandia National Lab awards 240985 and 76822 to U. of Michigan. JCZ was supported by an NPSC fellowship through Sandia.

Matthew Weis
University of Michigan, Ann Arbor

Date submitted: 22 Jul 2011 Electronic form version 1.4